

Application No. 10/622,900
Response to Office Action

Customer No. 01933

Listing of Claims:

1. (Currently Amended) A variable-profile mirror
comprising:

a flexible thin film having an optical reflective surface;

a frame member which supports said flexible thin film;

5 a substrate which is disposed opposite to said flexible thin
film, and which is bonded to said frame member;

a pressure chamber which includes a space surrounded by said
flexible thin film and said substrate, and in which said flexible
thin film and said substrate form a portion of a wall of the

10 pressure chamber;

* at least one pump device which is disposed opposite to
said pressure chamber via said substrate, and which is bonded to
said substrate;

15 * at least one first channel which extends through said
substrate, and which connects said pressure chamber to said pump
device; and

* at least one second channel which connects said pump
device to the outside,

20 wherein said pump device sucks or discharges fluid with
respect to said pressure chamber through said first and second

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channels, ~~and the~~ so as to vary a profile of said flexible thin
film ~~may be varied~~.

2. (Currently Amended) The variable-profile mirror
according to claim 1, wherein sectional areas of said first and
second channels in a direction vertical to a flow direction of
said fluid flowing through said first and second channels by
5 operation of said pump device are larger on a downstream side of
said flow than on an upstream side of said flow, and

wherein said pump device comprises:

a chamber connected to said first and second channels;

10 a diaphragm which ~~also serves as~~ forms a portion of ~~the~~
a wall of said chamber; and

a vibration device which vibrates said diaphragm.

3. (Original) The variable-profile mirror according to
claim 2, wherein a resonance frequency of the diaphragm of said
pump device is higher than a resonance frequency of said flexible
thin film.

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4. (Currently Amended) The variable-profile mirror according to claim 1, ~~further comprising: wherein the at least one first channel and the at least one second channel comprise a plurality of said first and channels and a plurality of~~

5 ~~said second channels; and~~

~~wherein the at least one pump device comprises a plurality of said pump device, devices;~~

wherein at least one of said pump device devices is connected to said pressure chamber via one of said first channel
10 ~~in such a manner that channels so as to pressurize said pressure chamber is pressurized, and is connected to the outside via one of said second channel, channels; and~~

wherein at least one ~~of the other of said pump device devices~~ is connected via another one of said first channels ~~in~~
15 ~~such a manner that so as to reduce the pressure of said pressure chamber is reduced, and is connected to the outside via another one of said second channels.~~

5. (Original) The variable-profile mirror according to claim 1, wherein said substrate comprises single-crystal silicon, and said first and second channels are opened by anisotropic etching from different surfaces of said substrate.